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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/721,849

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Joel A. Kubby

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EXAMINER

WOOD, KEVIN S

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/721,849

Applicant(s)

KUBBY ET AL.

Examiner

Kevin S Wood

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/28/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

FINAL REJECTION

Response to Amendment

1. This action is responsive to the Applicant's Amendment filed on 28 May 2004. Claims 1-3 have been amended and new claims 12-16 have been added. Claims 1-16 are pending in the application.
2. Based on the Applicant's Amendment the objection to the Abstract has been withdrawn.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 8-11 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,625,356 to Ticknor et al.

Referring to claim 8, Ticknor et al. discloses all the limitations of the claimed method. Ticknor et al. discloses a method of fabricating a micro-optical device having an aligned waveguide switch, comprising: forming a stationary input part with a plurality

Art Unit: 2874

of input waveguides (1110,1111); forming a stationary output part with a plurality of output waveguides (1130,1131); a movable part (905) with a plurality of switching waveguides, the movable part being movable relative to the stationary input and output parts; and forming at least one stop block (907,908) that limits movement of the movable part to align at least one of the switching waveguides with at least one of the input waveguides and at least one of the output waveguides. See Fig. 9A through Fig. 11, along with their respective portions of the specification.

Referring to claim 9, Ticknor et al. discloses all the limitations of the claimed method. Ticknor et al. discloses the forming the plurality of waveguides comprises defining a set of offsets between the waveguides of the movable part and the waveguides of the stationary input and output parts (1110,1111,1130,1131), and wherein forming the at least one stop block (907,908) comprises defining the at least one stop block with the set of offsets. See Fig. 9A through Fig. 11, along with their respective portions of the specification. Ticknor clearly discloses spacing or offsets between each of the waveguides and that the stop blocks are designed so that when the movable part contacts the stop blocks, the offset is accounted for and to make sure the waveguides that are intended to be coupled are properly aligned.

Referring to claims 10 and 11, Ticknor et al. discloses all the limitations of the claimed method. Ticknor et al. discloses the at least one stop block comprises defining a least one edge of the movable part with the set of offsets and defining at least one bumper connected to the movable part with the offsets. See Fig. 9A through Fig. 11, along with their respective portions of the specification. It is clear that the edges of the

Art Unit: 2874

movable part (905) have been designed to account for the offset between the waveguides and to act as a bumper for the stop blocks, in order to make sure the waveguides that are intended to be coupled are properly aligned.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-7 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,859,022 to Opdahl et al. This new rejection of claims 1-7 was necessitated by the Applicant's Amendment filed on 28 May 2004.

Referring to claim 1, Opdahl et al. discloses a micro-optical device having an aligned waveguide switch, comprising: a stationary input part with a plurality of input waveguides (500,600); a stationary output part with a plurality of output waveguides (501,601); a movable part (93) with a plurality of switching waveguides, the movable part being movable relative to the stationary input and output parts. Opdahl et al. does not specifically disclose at least one stop block that limits movement of the movable part to align at least one of the switching waveguides with at least one of the input waveguides and at least one of the output waveguides in the embodiment within Fig. 3a and 3b. However, Opdahl et al. does disclose at least one adjustable stop block (124) in the embodiment shown in Fig. 1c and Fig. 1b, where the purpose of the stop block is to limits movement of the movable part to align at least one of the switching waveguides with at least one of the input waveguides and at least one of the output waveguides. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a stop block within the optical switch disclosed in Fig. 3a and Fig. 3b of the Opdahl et al. reference in order to stop the movement of the movable part (93) at a point where the movable waveguides are in alignment with the stationary waveguides.

Referring to claims 2, 15, and 16, Opdahl et al. discloses all the limitations of the claimed invention, except Opdahl et al. does not appear to specifically disclose that the stationary input part, the stationary output part and the movable part comprise a single-crystal-silicon layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a single-crystal-silicon to form the parts, since it

Art Unit: 2874

has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. *In re Leshin*, 125 USPQ 416.

Referring to claim 3, Opdahl et al. discloses all the limitations of the claimed invention, except Opdahl et al. does not appear to specifically disclose that the stop blocks comprises a single-crystal-silicon layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a single-crystal-silicon to form the stop block, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. *In re Leshin*, 125 USPQ 416.

Referring to claims 4 and 6, Opdahl et al. discloses all the limitations of the claimed invention, except Opdahl et al. does not appear to specifically disclose that the stop blocks comprises a polysilicon layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use polysilicon layers to form the stop blocks, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. *In re Leshin*, 125 USPQ 416.

Referring to claims 5 and 7, Opdahl et al. discloses all the limitations of the claimed invention, except Opdahl et al. does not appear to specifically disclose that the bumper comprises a polysilicon layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a polysilicon layer to form the bumper, since it has been held to be within the general skill of a worker in the

Art Unit: 2874

art to select a known material on the basis of its suitability for the intended use. *In re Leshin*, 125 USPQ 416.

Referring to claims 12-14, Opdahl et al. discloses all the limitations of the claimed method. Opdahl et al. discloses a method of fabricating a micro-optical device having an aligned waveguide switch, comprising: forming a stationary input part with a plurality of input waveguides (500,600); forming a stationary output part with a plurality of output waveguides (501,601); a movable part (93) with a plurality of switching waveguides (551,552,553,554), the movable part being movable relative to the stationary input and output parts; and forming at least one stop block (124) that limits movement of the movable part to align at least one of the switching waveguides with at least one of the input waveguides and at least one of the output waveguides. See Fig. 1a through Fig. 3b, along with their respective portions of the specification. Opdahl et al. discloses all the limitations of the claimed invention, except Opdahl et al. does not appear to specifically disclose that the stationary input part, the stationary output part and the movable part comprise a single-crystal-silicon layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a single-crystal-silicon to form the parts, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. *In re Leshin*, 125 USPQ 416.

Response to Arguments

8. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection. The Applicant argues that U.S. Patent No. 6,625,356 to Ticknor et al. does not appear to specifically disclose that the movement of the movable part is substantially transverse as claimed in amended claim 1. Instead Ticknor et al. appears to disclose the movement of the movable block to be substantially rotational. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 4,859,022 to Opdahl et al. This new rejection has been necessitated by the Applicant's Amendment of claims 1-3.

9. Applicant's arguments filed on 28 May 2004 with respect to claims 8-11 have been fully considered but they are not persuasive. The examiner has thoroughly reviewed the applicant's arguments but firmly believes the cited reference(s) to reasonably and properly meet the limitations of the claimed limitations.

U.S. Patent No. 6,625,356 to Ticknor et al. discloses a method of fabricating a micro-optical device having an aligned waveguide switch, comprising: forming a stationary input part with a plurality of input waveguides (1110,1111); forming a stationary output part with a plurality of output waveguides (1130,1131); a movable part (905) with a plurality of switching waveguides, the movable part being movable relative to the stationary input and output parts; and forming at least one stop block (907,908) that limits movement of the movable part to align at least one of the switching waveguides with at least one of the input waveguides and at least one of the output

waveguides. See Fig. 9A through Fig. 11, along with their respective portions of the specification.

The applicant's primary argument is that the waveguides (602, 603, 612, 613, 802, 812, 813) within the Ticknor et al. reference are not in one structural layer. The examiner respectfully disagrees with this argument. It is clear from Fig. 6, 8A and 8B, that the waveguides are within the same structural layer when the switch is in the "bar" state. Therefore the cited reference meets all of the claimed limitations.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Art Unit: 2874

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S Wood whose telephone number is (571) 272-2364. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KSW


AKM ENAYET ULLAH
PRIMARY EXAMINER